Neutron veto scintillator study

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We analyzed various scintillators, both plastic and liquid, to determine their relative and absolute light yields and determine their effectiveness for use in the Cryogenic Dark Matter Search (CDMS) neutron veto. The 2,5-diphenyloxazole (PPO), DPA, and Trimethyl borate (TMB) concentrations were varied in both plastic and liquid scintillators. They were then exposed to barium-133, cesium-137, californium and the light output was measured using a photomultiplier tube (PMT) and recorded using a data acquisition system. The data was formed into histograms based on the integral of the recorded waveforms—an indication of the particle's energy level. Finally, plotting the light yield vs. PPO, DPA and TMB concentration revealed that increasing PPO decreased light yield to a cap, adding DPA increased overall light yield significantly, and TMB something.